REMARKS

The specification has been rewritten to overcome the objection to the disclosure. Claims 1-3, 11-13, and 21 have been rewritten to overcome the rejection of claims 1-3, 11, 12, and 21 under 35 U.S.C. §112, second paragraph, and the objections to claims 2-3, 11, and 13. In particular, please note that the amendment to claim 11 to overcome the rejection under 35 U.S.C. §112, second paragraph, is supported in the specification by, for example, page 28, lines 4-11, and it should further be noted that the amendment to claim 12 to overcome the rejection under 35 U.S.C. §112, second paragraph, is supported in the specification by, for example, page 30, line 8 to page 31, line 5.

Claims 1, 3, 4, 8, 10, 15 and 21 were rejected under 35 U.S.C. § 102(b) as being anticipated by Yokoyama et al., U.S. Patent No. 6,094,293. Claim 9 was rejected under 35 U.S.C. §103(a) as being unpatentable over Yokoyama et al. Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Yokoyama et al., in view of Hagelin et al., U.S. Patent No. 6,283,601.

Independent claims 1, 10, and 21 provide that the mirror section has a fixedly predetermined angle or an angle larger than zero with respect to a surface of a substrate. In contrast, in Yokoyama et al., what the Examiner conceives to be the mirror section 332L, 336S (Office Action, pp. 4-6), is parallel to what the Examiner conceives to be the surface of the substrate, 331, 334, Office Action, pp. 4-6).

Claims 2 and 6-7, were stated to be allowable if rewritten to overcome the rejections under 35 U.S.C. §112, second paragraph, set forth in the Office Action, and to include all of the limitations of the base claim and any intervening claims. Claims 13-14 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form

including all of the limitations of the base claim and any intervening claims. Claims 2, 6-7, and 13-14 were so rewritten.

Claims 16-20 and 22-24, not elected in response to the Office Action mailed on November 5, 2002, were cancelled, without prejudice or disclaimer, in order to reduce the additional claim fees due herein. Applicant specifically reserves the right to file divisional application(s) containing claims 16-20 and 22-24.

Please charge Deposit Account 50-1290 the sum of $84.00 for one (1) independent claim added by this amendment in excess of the three (3) independent claims covered by the basic filing fee.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached pages are captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE."

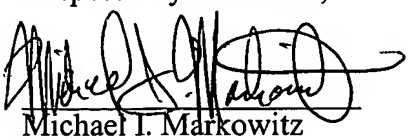
CLOSING

An earnest effort has been made to be fully responsive to the Examiner's objections. In view of the above amendments and remarks, it is believed that independent claims 1-2, 6-7, 10, 13-14, and 21 are in condition for allowance, as well as those claims dependent therefrom. Passage of this case to allowance is earnestly solicited.

However, if for any reason the Examiner should consider this application not to be in condition for allowance, he is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper, not fully covered by an enclosed check, may be charged on Deposit Account 50-1290.

Respectfully submitted,



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Enclosure: Version With Markings to Show Changes Made

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VERSION WITH MARKINGS TO SHOW CHANGE

IN THE SPECIFICATION

The paragraphs beginning on page 21, line 6, and ending on page 22, line 13, have been rewritten as follows:

Figs. 6A to 6H show a manufacturing method of the mirror section 2 used in the optical path control apparatus in the first embodiment. As shown in Fig. 6A, a silicon wafer 6 has the diameter of 6 inches, the crystal orientation of the [(100),] (100) plane, and thickness of 1 mm. Thermal oxidation films 7 are formed on the both sides of the silicon wafer to have the thickness of 1 μm. Next, as shown in Fig. 6B, a photoresist layer 8 is coated on one side of thermal oxidation films 7 to have the thickness of 5 μm. After exposure is carried out through a predetermined mask, development, rinsing by water, and patterning are carried out to form a first opening 9 in the photoresist layer 8. The first opening 9 has the shape of 100 μm $\times$ 70 μm. The photoresist layer 8 with the first opening 9 is immersed in buffered fluoric acid so as to etch thermal oxidation film 7 on the surface of the silicon wafer 6.

Next, as shown in Fig. 6C, after water-rinsing, the photoresist layer 8 is removed with solvent and is rinsed. Thus, a second opening 11 is formed in the thermal oxidation film 7 so that an exposed surface 12 is formed on the silicon wafer 6. As shown in Fig. 6D, the exposed surface of silicon wafer 6 through the second opening 11 is subjected to anisotropic etching with potassium hydroxide solution. Thus, a concave section 13 is formed to have the crystal orientation of the (111) plane and a square pyramid cross section. Then, as shown in Fig. 6E, the whole of thermal oxidation film 7 on the side of the silicon wafer 6 where the concave section 13 is formed is etched with the buffered fluoric acid. Here, as shown in Fig. 7A, a convex section

14 may be formed on the silicon wafer 6 as a die and the concave section 13 may be formed in the convex section 14, considering the installation.

IN THE CLAIMS

Claims 1-3, 6-15, and 21 have been rewritten as follows:

1. (Once Amended) An optical path control apparatus comprising:

a first substrate;

a second substrate [movably provided for] which is movable relative to said first substrate;

a mirror section provided on said second [substrate;] substrate to have a reflective surface with a fixedly predetermined angle with respect to a surface of said second substrate; and

a driving section which moves said second substrate such that a first optical path of input light to said mirror section is optically connected to one of a plurality of second optical paths.

2. (Once Amended) [The optical path control apparatus according to claim 1,] An optical path control apparatus comprising:

a first substrate,

a second substrate movably provided for said first substrate;

a mirror section provided on said second substrate; and

a driving section which moves said second substrate such that a first optical path of input light to said mirror section is optically connected to one of a plurality of second optical paths,

wherein said driving section is [a] an ultrasonic wave generating source, and

said second substrate is moved by progressive waves generated by said ultrasonic wave generating source and is located on a position by standing waves, and

said first optical path is optically connected to said second optical path associated with said position.

3. (Once Amended) The optical path control apparatus according to claim 1, wherein said driving section is [a] an ultrasonic wave generating source [is] with a piezo-electric [device.] layer on the second substrate.

6. (Once Amended) [The optical path control apparatus according to claim 1,] An optical path control apparatus comprising:

a first substrate;

a second substrate movably provided for said first substrate;

a mirror section provided on said second substrate; and

a driving section which moves said second substrate such that a first optical path of input light to said mirror section is optically connected to one of a plurality of second optical paths, wherein said second substrate has a micro light wheel,

said driving section has lasers, and rotates said second substrate based on laser beams emitted by said lasers, and

said first optical path is optically connected to said second optical path associated with a rotation angle of said mirror section.

7. (Once Amended) [The optical path control apparatus according to claim 1,] An optical path control apparatus comprising:

a first substrate;

a second substrate movably provided for said first substrate;

a mirror section provided on said second substrate; and

a driving section which moves said second substrate such that a first optical path of input light to said mirror section is optically connected to one of a plurality of second optical paths, wherein said second substrate is provided in a concave section of said first substrate, said concave section being filled with fluid;

said driving section moves said second substrate by supplying said fluid from one end of said concave section and absorbing said fluid from another end of said concave section,

said mirror section reflects said input light based on the movement of said second substrate such that said first optical path is optically connected to said second optical path.

8. (Once Amended) The optical path control apparatus according to claim 1, wherein said mirror section is a triangular prism shaped thin film mirror.

9. (Once Amended) The optical path control apparatus according to claim 1, wherein said mirror section is a triangular prism shaped lump type mirror.

10. (Once Amended) An optical path control apparatus comprising:

a substrate; and

a mirror section which has a reflective surface with a fixedly predetermined angle with respect to a surface of said substrate and is provided on said substrate and changes an optical path of reflection light to input light by said mirror section in response to an input signal.

11. (Once Amended) The optical path control apparatus according to claim 10, wherein said mirror section [having] has two mirror portions, each of which comprises:

a mirror layer provided as a surface layer; and

an underside layer provided under said mirror layer and having a conductive [line,] wire,

wherein said [tow] two mirror portions attract or repel each other based on current as said input signal supplied to said conductive [lines] wires such that a reflection angle of said mirror section is changed.

12. (Once Amended) The optical path control apparatus according to claim 10, wherein said mirror section comprises:

a mirror layer provided as a surface layer;

a [transformed] layer changing its shape in response to said input signal provided under said mirror layer; and

an electrode layer provided under said [transformed layer,] layer changing its shape,

wherein said mirror layer of said mirror section is transformed through transformation of said [transformed] layer changing its shape in response to supply of said input signal such that a reflection angle of said mirror section is changed.

13. (Once Amended) [The optical path control apparatus according to claim 10,] An optical path control apparatus comprising:

a substrate; and

a mirror section which is provided on said substrate and changes an optical path of reflection light to input light by said mirror section in response to an input signal, wherein said mirror section [having] has two mirror portions, each of which comprises:

a mirror layer provided as a surface layer; and

a magnetic layer provided under said mirror layer,

wherein said [tow] two mirror portions attract or repel each other through magnetization of said magnetic layer based on said input signal such that a reflection angle of said mirror section is changed.

14. (Once Amended) [The optical path control apparatus according to claim 10,] An optical path control apparatus comprising:

a substrate; and

a mirror section which is provided on said substrate and changes an optical path of reflection light to input light by said mirror section in response to an input signal, wherein said mirror section comprises:

a mirror layer provided as a surface layer;

a shape memory layer provided under said mirror layer; and

a heating layer provided under said shape memory layer,

wherein said mirror layer of said mirror section is transformed due to transformation of said shape memory layer through heating by said heating layer in response to said input signal such that a reflection angle of said mirror section is changed.

15. (Once Amended) The optical path control apparatus according to claim 10, wherein said mirror section is a triangular prism shaped thin film mirror.

21. (Once Amended) An optical path control apparatus comprising:

a first substrate;

a second substrate [movably provided for] which is movable relative to said first substrate;

a mirror section provided over said first and second substrate, and having a reflective surface with an angle larger than zero with respect to a surface of said first substrate, and said reflective surface being on a side of said first substrate; and

a driving section which moves said second substrate such that a first optical path of input light to said mirror section is optically connected to one of a plurality of second optical paths.